

ABSTRACT

Methods, systems, and computer program products are disclosed for dynamically integrating software resources (such as web services and other back-end software resources) using the services of a content framework (such as a portal platform). A portlet model is leveraged to allow programmatic portlets to serve as proxies for web services, thereby extending portlets beyond their traditional visual role. A deployment interface and a system interface are described for these portlet proxies. The deployment interface is used for composing new web services, and a composition tool is described. The system interface allows for run-time management of the web services by the portal platform. The service provider for a particular function may be bound to the portlet proxy at development time or at run-time.

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of each other, and the *Geophilus* are the only ones which have been found in the same place.